FEB 2 1 1986

FEM 1.209:170320

394-C-13

FLOOD INSURANCE STUDY

ORIGINAL

COMPLETED

CITY OF AURORA, ILLINOIS
KANE AND DU PAGE COUNTIES

REVISED:

MAY 15, 1986

Federal Emergency Management Agency

COMMUNITY NUMBER -170320

BEST COPY AVAILABLE

NOTICE TO
FLOOD INSURANCE STUDY USERS

Individual components of this Flood Insurance Study (i.e., text, tables, profiles, and maps) are subject to revision as additional data become available. Because revised components may be issued separately, study users should consult the community map repository for those components that are currently effective.

In cases where this Flood Insurance Study and any components thereof warrant revision, a Revisions Description section may be incorporated into this text. When applicable, study users should refer to the Revisions Description to obtain pertinent data and information concerning revisions.

BEST COPY AVAILABLE

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
	1.1 Purpose of Study	1
	1.2 Coordination	1
	1.3 Authority and Acknowledgments	1
2.0	AREA STUDIED	2
	2.1 Scope of Study	2
	2.2 Community Description	2
	2.3 Principal Flood Problems	5
	2.4 Flood Protection Measures	5
3.0	ENGINEERING METHODS	6
	3.1 Hydrologic Analyses	6
	3.2 Hydraulic Analyses	7
4.0	FLOOD PLAIN MANAGEMENT APPLICATIONS	10
	4.1 Flood Boundaries	10
	4.2 Floodways	10
5.0	INSURANCE APPLICATION	11
	5.1 Reach Determinations	11
	5.2 Flood Hazard Factors	19
	5.3 Flood Insurance Zones	19
	5.4 Flood Insurance Rate Map Description	20

BEST COPY AVAILABLE

TABLE OF CONTENTS (continued)

		Page
6.0	OTHER STUDIES	20
7.0	LOCATION OF DATA	20
8.0	BIBLIOGRAPHY AND REFERENCES	22
9.0	REVISIONS DESCRIPTION (Revised May 15, 1986)	24
	9.1 Purpose	24
	9.2 Acknowledgments	24
	9.3 Scope	24
	9.4 Hydrologic and Hydraulic Analyses	24
	9.5 Floodways	25
	9.6 Other Studies	25
	9.7 Location of Data	25
	9.8 Bibliography and References	25

FIGURES

Figure 1 -	Vicinity Map	3
Figure 2 -	Floodway Schematic	18

TABLES

Table 1 -	Summary of Discharges	8
Table 2 -	Floodway Data	12
Table 3 -	Flood Insurance Zone Data	21

BEST COPY AVAILABLE

TABLE OF CONTENTS (continued)

EXHIBITS

Exhibit 1 - Flood Profiles

Fox River	Panels 01P-02P
Fox River East Channel	Panel 03P
Indian Creek	Panels 04P-06P
Selmarten Creek	Panel 07P
Waubansee Creek	Panels 08P-09P

Exhibit 2 - Flood Boundary and Floodway Map Index
Exhibit 3 - Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

BEST COPY AVAILABLE

FLOOD INSURANCE STUDY
CITY OF AURORA, ILLINOIS

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the City of Aurora, Kane and DuPage Counties, Illinois, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert the City of Aurora to the regular program of flood insurance by the Federal Insurance Administration (FIA). Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

Through discussions with officials of the City of Aurora, the State of Illinois, the FIA, and Harza Engineering Company (the study contractor), study areas were defined on the following four streams: the Fox River, Indian Creek, Selmarten Creek (a small tributary of Indian Creek), and Waubansee Creek. Hydrologic analyses were coordinated by the State of Illinois Department of Transportation, Division of Water Resources (DWR), and by the Illinois State Water Survey (SWS). Hydraulic data were provided by the Aurora City Engineer, the Aurora Township Highway Commissioner, the SWS, the DWR, and private engineering companies.

During the course of the work, flood elevations, flood boundaries, and floodway delineations were reviewed with city officials and the FIA. On December 7, 1976, results of the study contractor's work were reviewed at a final Consultation and Coordination Officer's meeting attended by personnel of the study contractor, the FIA, the DWR, and the City Engineer's Office, and by citizens of Aurora.

1.3 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were performed by Harza Engineering Company for the Federal Insurance Administration, under Contract No. H-3809. This work, which was completed in October 1976, covered all significant flooding sources in the City of Aurora.

BEST COPY AVAILABLE

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of Aurora, located in northeastern Illinois. The area of study is shown on the Vicinity Map (Figure 1). There are numerous enclaves inside the corporate limits of Aurora which are under the jurisdiction of either Kane County or DuPage County. These areas were not included in this study.

The Fox River, the Fox River East Channel, Indian Creek, Selmarten Creek, and Waubansee Creek were studied using detailed methods.

By agreement between the study contractor and the FIA, the reach of Selmarten Creek included in this study is from its confluence with Indian Creek near Molitor Road to the East-West Tollway. Waubansee Creek was studied from the downstream corporate limits of the City of Aurora upstream to the point where it crosses the Elgin Joliet and Eastern Railroad.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction for the next five years, through July 1980.

Flooding on Blackberry Creek and near Mastodon Lake was studied by approximate methods. Approximate methods of analysis were used to study those areas having low development potential and/or minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the FIA.

2.2 Community Description

The City of Aurora is located about 40 miles west of Chicago and in the southern parts of Kane and DuPage Counties. It has easy access to and from other areas of Illinois by two Interstate Tollways, several other major highways, and the Burlington Northern Railroad.

The population of Aurora has increased from 63,700 people in 1960 to 74,200 people in 1970. Economic growth is reflected in the change of per household income from $7,180 yearly in 1960 to $11,270 yearly in 1970.

BEST COPY AVAILABLE

BLANK PAGE

The Aurora area has a balance of agriculture, light and heavy industry, research facilities, mixed-density residential development, shopping centers, and a central business district. Neighboring communities include Montgomery, Wheaton, Batavia, Naperville, and North Aurora. The City of Aurora includes an incorporated area of 25.7 square miles. Elevations generally vary from 630 to 750 feet within the city limits.

The City of Aurora is divided by the Fox River which flows southwestward from southern Wisconsin to its confluence with the Illinois River at Ottawa. The drainage area of the Fox River at Illinois Avenue in Aurora is 1,705 square miles; the drainage area of the Fox River watershed at Ottawa is 2,658 square miles. The Fox River East Channel is merely an eastward diversion of the main stem in several areas.

Indian Creek is a major tributary of the Fox River in Aurora. The creek begins north of the incorporated limits. It flows southward along the East-West Tollway Access Road, then turns westward through the urbanized area of the city along the Burlington Northern Railroad. Indian Creek enters the Fox River in Aurora near Pierce Street.

The Waubansee Creek headwaters drain into a series of three small detention reservoirs between New York Street and U. S. Highway 54. The creek flows southwestward to join the Fox River at Oswego.

Development in the Fox River flood plain within the corporate limits of the City of Aurora is primarily moderate to heavy density industrial and commercial structures with some scattered residential development. The flood plain of Indian Creek is relatively wide near its confluence with the Fox River because the banks of Indian Creek are poorly defined and the topography is generally flat. In this area, development is primarily industrial, of moderate to heavy density, with some commercial structures. The flood plain of Indian Creek upstream from High Street, an area which includes the flood plain of Selmarten Creek, contains moderate to heavy density residential development. Upstream of the East-West Tollway the flood plain is rural. The flood plain of Waubansee Creek within the City of Aurora is rural in nature with minor residential development.

Climatic conditions are typical of the central Midwest. The average annual temperature is 49.4°F at the Aurora College; the average January temperature is 23.3°F, and the average July temperature is 73.5°F.

Continuing economic development is expected for the Aurora region; pressures leading to intensified flood plain use will undoubtedly

BEST COPY AVAILABLE

accompany such development. Development along streams must be carefully controlled so that it will not encroach on floodways.

2.3 Principal Flood Problems

Indian Creek and its tributary, Selmarten Creek, are subject to severe flooding resulting from the inadequacy of the natural channel and appurtenant drainage structures to accommodate the high rates of runoff resulting from intense thunderstorm precipitation (Reference 1). Channels are inadequate to handle the sudden surge of runoff, and discharges are retarded by the poor flow characteristics of the channels and by inadequate capacities of bridge, culvert, and sewer structures which cross the streams.

The major problem drainageway in the City of Aurora is Indian Creek because it passes through a high density development and because urbanization is proceeding northward into the upper portion of the watershed.

The Waubansee Creek watershed is next in line for urban development, and care should be given to assure reasonably controlled growth patterns. Flood problems on the Fox River are generally controlled by existing flood control projects of the DWR.

Large magnitude floods (i.e., greater than 9,000 cfs) have occurred on the Fox River near Aurora three times in the last 29 years. The flood of record on the Fox River at the Aurora sewage treatment plant occurred in October 1954 and had a discharge of 14,480 cfs, estimated to be a 30-year event. Other large floods occurred on the Fox River in April 1973 (10,260 cfs) and April 1968 (9,300 cfs). The recurrence intervals of these floods are about 8 years and 5 years, respectively. These three floods caused some damage to business, commercial, and residential structures.

2.4 Flood Protection Measures

Discharges of the Fox River at Aurora are regulated by several dams located upstream along the Fox River system. Due to this regulation, discharges during a flood event are lower than those which would have occurred prior to regulation. The most recent flood control improvement on the Fox River near Aurora is the reconstruction of the North Aurora Dam at North Aurora. This project was designed by the DWR in 1974 and was financed and constructed by the State of Illinois in 1975.

BEST COPY AVAILABLE

Two on-channel surface reservoirs are under construction on Waubansee Creek; these reservoirs are located just upstream from the crossing of the Elgin Joliet and Eastern Railroad. Construction of the reservoirs meets the FIA requirements for being considered in the hydraulic analyses. They are being developed by a private development company for flood control related to urbanization. In addition to the reservoirs, on-site retention storage is being installed throughout the watershed wherever substantial residential or commercial construction is taking place (Reference 2).

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Floods having recurrence intervals of 10, 50, 100, and 500 years have been selected as having special significance for flood plain management and for flood insurance premium rates. The analyses reported here reflect current conditions in the watersheds of the flooding sources.

3.1 Hydrologic Analyses

Hydrologic analyses, including detailed review of prior studies, were carried out to determine the peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail in the City of Aurora.

The Fox River is a highly regulated river with 16 dams along a reach of 100 miles from its confluence with the Illinois River near Ottawa upstream to Lake Pistakee in Wisconsin. The City of Aurora is located approximately 48 miles upstream from the Fox River confluence, with dams located upstream, downstream and within the city limits. The discharge-frequency relationships for the Fox River at Aurora (Illinois Avenue) were developed by the U. S. Geological Survey (USGS) using regional flood-frequency relationships for streams in northern Illinois (Reference 3). The results were then adjusted to reflect the present channel conditions, as published in Hydrologic Investigations Atlas (Reference 4). Since 1963, no new dams have been constructed on the Fox River. Some dams have been reconstructed, but the crest elevations have not been changed. A technical review of the 1963 relationships indicated that the relationships are still valid in 1976. The increased urbanization which occurred in Aurora between 1963 and 1976 does not affect the peak discharge-frequency relationships for the Fox River at Aurora because the 1,705 square-mile drainage area at Illinois Avenue is large, and

BEST COPY AVAILABLE

the peak flow from urban runoff does not coincide with the peak discharge on the Fox River.

Two other similar discharge-frequency curves were prepared for the Fox River, one at the East-West Tollway, and the other at St. Peters School, both in Aurora. These locations are, respectively, upstream and downstream of Illinois Avenue. Flood peaks originating from storm runoff from the drainage areas between these three locations were estimated using the Rational Method. In most cases these local peak discharges will not synchronize with flood peaks on the Fox River which pass through the city. Therefore, it was assumed for the purpose of estimating peak discharge on the Fox River that peak discharges that met the Fox River peak discharge from the intervening areas have a magnitude equal to about one-half their corresponding peaks for a given recurrence interval.

In areas where the Fox River divides, the discharge was reduced along the main stem (always the west channel). The remainder of the total discharge was assigned to the Fox River East Channel.

Estimates of the 10-, 50-, and 100-year discharges for the other streams studied in detail were made using regional equations for Illinois (Reference 5). These equations were developed by a multiple regression analysis and considered the following basin characteristics: drainage area, main channel length and slope, mean basin elevation, percentage of forest cover, mean annual precipitation, rainfall intensity, area of lakes and ponds, and soil rainfall-runoff relationships.

Estimates of 100-year flood discharges for the Fox River, Indian Creek, and Selmarten Creek were sent to the SWS for review. These discharges were certified by the DWR for use in the state's flood plain regulation program. Data are located in a repository of flood related data administered by the SWS.

Discharges for the 10-, 50-, 100-year floods were plotted on log-normal probability paper, and the 500-year flood discharges were estimated by straight line extrapolation. The 500-year flood discharge is less reliable than the others because the average period of record for stream gages used to prepare the regional equations is about 30 years. The reliability of the 100-year flood discharge is between those of the 50- and 500-year floods. Discharges and their appropriate recurrence intervals for the streams studied in detail are shown in Table 1.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding sources studied in detail in Aurora were carried out to provide estimates

BEST COPY AVAILABLE

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
FOX RIVER					
At Aurora	1,705	12,100	17,000	18,600	24,100
At Aurora Dam	1,705	5,950	8,400	9,180	11,900
FOX RIVER EAST CHANNEL					
At Aurora Dam	1,705	6,150	8,600	9,420	12,200
INDIAN CREEK					
At cross section AJ	5.2	390	675	825	1,215
At mouth	16.1	1,014	1,565	1,877	2,500
SELMARTEN CREEK					
At mouth	2.25	240	380	480	700
WAUBANSEE CREEK					
At cross section L	4.6	270	460	501	700
At Kane-Kendall County line	16.5	770	1,220	1,447	1,950

of the elevations of floods of the selected recurrence intervals along each of these flooding sources.

The water-surface elevations on the Fox River, the Fox River East Channel, Indian Creek, Selmarten Creek, and Waubansee Creek were computed using the U. S. Army Corps of Engineers HEC-2 step-backwater computer program (Reference 6). Cross sections and structural data for the Fox River, Indian Creek, and Selmarten Creek were provided by the DWR (References 1 and 7). The study contractor obtained additional cross sections and structural data on Indian Creek and Selmarten Creek because extensive channel and structure modifications were made subsequent to the 1960 survey by the DWR. Cross sections for the backwater analyses were located at close intervals above and below bridges and culverts in order to compute the significant backwater effects from these structures.

The Waubansee Creek HEC-2 backwater model was used as supplied by the SWS, including all cross sections and structural data (Reference 8).

Channel roughness factors (Manning's "n" values) for these computations were assigned on the basis of field inspection, analyses of

BEST COPY AVAILABLE

photographs (using Reference 9), and from previous studies by the DWR and the SWS (References 1, 2, 7, 8, 10, 11). The range of "n" values for the four streams studied are shown below:

Roughness Coefficients
Manning's "n" Values

Stream	Channel	Overbank
Fox River	0.025-0.040	0.060-0.070
Fox River East Channel	0.025-0.040	0.060-0.070
Indian Creek	0.030-0.055	0.040-0.150
Selmarten Creek	0.033	0.060
Waubansee Creek	0.035-0.055	0.050-0.070

Starting water-surface elevations on the Fox River and Waubansee Creek were based on the slope-area method. Starting water-surface elevations on Indian Creek were obtained from the Fox River water-surface profiles; starting elevations on Selmarten Creek were obtained from the Indian Creek water-surface profiles.

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. On the Fox River a large island splits the flow between Benton Street and Fox Street. In this area the main flow travels down the West Channel, which has been shown on the profiles for the Fox River. The profile for the East Channel has been shown separately. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 3).

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as the Sea Level Datum of 1929. Locations of the elevation reference marks used in this study are shown on the maps.

The boundaries of the 100-year floods in the areas studied by approximate methods were transferred from the Flood Hazard Boundary Map for the City of Aurora (Reference 12).

Flood elevations are often raised by debris; the hydraulic analyses for this study, however, are based only on the effects of unobstructed flow. The flood elevations as shown on the profiles are thus considered valid only if hydraulic structures in general remain unobstructed and dams and other flood-control structures described above operate properly and do not fail.

BEST COPY AVAILABLE

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage state and local governments to adopt sound flood plain management programs. Each Flood Insurance Study, therefore, includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FIA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and the 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic maps enlarged to a scale of 1:4,800 with contour intervals of 2 feet and 10 feet (References 13 and 14). In cases where the 100- and the 500-year flood boundaries are close together, only the 100-year boundary has been shown.

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 3). Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding. Owing to limitations of the map scale or lack of detailed topographic data, such areas are not shown.

The boundaries of the 100-year flood in the areas studied by approximate methods were transferred from the Flood Hazard Boundary Map for the City of Aurora (Reference 12).

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent

BEST COPY AVAILABLE

flood plain areas that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights. Minimum standards of the FIA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The State of Illinois, however, has adopted the criterion of no significant increase in flood height. Thus, the floodways having a surcharge of no more than 0.1 foot have been delineated for this study. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented for this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2). The floodway for the Fox River splits in two above New York Street and reconverges below Benton Street. In addition, portions of the floodway on the Fox River and Indian Creek lie outside of the corporate limits.

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated using the above-referenced topographic maps. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 0.1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FIA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the City of Aurora.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Fox River							
A	248,790	352	4,054	4.6	622.0	621.9	0.1
B	249,330	522	4,922	3.8	622.2	622.2	0.0
C	250,030	363	3,488	5.3	622.3	622.2	0.1
D	250,850	506	3,773	4.9	622.7	622.7	0.0
E	251,310	220	1,956	9.5	622.8	622.7	0.1
F	251,550	430	3,471	5.4	623.6	623.5	0.1
G	252,290	609	5,261	3.5	624.4	624.3	0.1
H	252,640	648	6,069	3.1	624.5	624.4	0.1
I	252,930	774	5,442	3.4	624.6	624.5	0.1
J	253,260	190	1,687	5.9	626.0	625.9	0.1
K	254,210	411	2,938	3.5	627.1	627.1	0.0
L	254,570	497	2,802	3.6	627.3	627.3	0.0
M	254,870	480	4,904	3.7	627.6	627.5	0.1
N	255,160	356	4,435	4.2	628.4	628.3	0.1
O	255,390	360	4,557	4.1	628.5	628.4	0.1
P	255,620	290	3,699	5.0	628.6	628.5	0.1

[1]FEET ABOVE MOUTH

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

FLOODWAY DATA

FOX RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Fox River (continued)							
Q	256,100	340	3,610	5.2	628.8	628.7	0.1
R	256,270	358	3,914	4.8	628.9	628.8	0.1
S	256,520	463	5,570	3.3	629.3	629.2	0.1
T	256,750	164	1,749	5.2	629.3	629.2	0.1
U	257,250	161	1,633	5.6	629.5	629.4	0.1
V	257,780	160	1,710	5.4	629.9	629.8	0.1
W	257,970	164	1,596	5.8	630.0	629.9	0.1
X	258,200	185	2,550	3.6	635.0	635.0	0.0
Y	258,630	605	6,315	2.9	635.2	635.2	0.0
Z	259,100	648	6,484	2.9	635.2	635.2	0.0
AA	260,100	720	6,801	2.7	635.4	635.4	0.0
AB	260,620	740	5,744	3.2	635.4	635.4	0.0
AC	261,160	1,190	4,471	4.2	635.4	635.4	0.0
AD	261,440	1,220	3,996	4.7	635.4	635.4	0.0
AE	262,310	840	7,253	2.6	635.9	635.8	0.1
AF	262,780	730	6,105	2.8	635.9	635.9	0.0
AG	263,140	710	6,953	2.5	636.0	636.0	0.0
AH	264,320	700[2]	5,771	3.0	636.0	636.0	0.0

[1]FEET ABOVE MOUTH
[2]THIS WIDTH EXTENDS BEYOND CORPORATE LIMITS

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

FLOODWAY DATA

FOX RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Fox River (continued)							
AI	264,730	676[2]	5,471	3.1	636.1	636.1	0.0
AJ	265,260	636[2]	5,339	3.2	636.2	636.2	0.0
Fox River East Channel							
A	253,290	144	1,335	6.3	625.0	625.0	0.0
B	254,170	156	1,471	5.7	626.4	626.3	0.1
C	254,360	160	1,261	6.7	626.6	626.5	0.1
D	257,060	164	1,815	5.2	629.4	629.3	0.1
E	257,530	162	1,725	5.5	629.6	629.5	0.1
F	258,020	171	1,580	6.0	629.7	629.6	0.1
G	258,240	171	1,680	5.9	629.9	629.8	0.1
H	258,470	235	2,716	3.5	635.0	635.0	0.0
Indian Creek							
A	255	1,270	6,444	0.29	637.0	637.0	0.0
B	804	579	1,159	1.62	644.7	644.7	0.0
C	1,025	20	229	8.20	645.2	645.2	0.0

[1]FEET ABOVE MOUTH
[2]THIS WIDTH EXTENDS BEYOND CORPORATE LIMITS

BEST COPY AVAILABLE

TABLE 2

FEDERAI EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

FLOODWAY DATA

FOX RIVER, FOX RIVER – EAST CHANNEL AND INDIAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Indian Creek (continued)							
D	1,422	30	330	5.69	647.3	647.3	0.0
E	1,765	20	391	4.80	649.3	649.3	0.0
F	2,515	40	472	3.98	657.9	657.9	0.0
G	3,015	90	245	7.66	659.3	659.2	0.1
H	3,800	30	209	8.98	666.2	666.1	0.1
I	4,590	96	405	4.63	670.2	670.1	0.1
J	5,670	57	326	5.37	673.6	673.6	0.0
K	6,240	117	335	5.22	676.0	676.0	0.0
L	7,350	36	272	5.17	682.5	682.4	0.1
M	8,550	126	449	3.13	688.7	688.6	0.1
N	9,320	34	267	5.26	691.0	690.9	0.1
O	10,080	140	1,310	1.03	692.7	692.6	0.1
P	10,520	55	241	5.62	692.7	692.6	0.1
Q	10,685	275	694	1.95	695.1	695.0	0.1
R	12,085	31[2]	125	10.84	698.8	698.7	0.1
S	12,635	283[2]	1,552	0.87	700.8	700.8	0.0
T	13,295	376[2]	1,453	0.89	701.0	701.0	0.0
U	14,455	421	1,784	0.72	703.1	703.1	0.0

[1]FEET ABOVE MOUTH
[2]THIS WIDTH EXTENDS BEYOND CORPORATE LIMITS

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

FLOODWAY DATA

INDIAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Indian Creek (continued)							
V	15,030	89	398	3.24	704.3	704.2	0.1
W	15,590	279	1,165	1.11	704.9	704.8	0.1
X	16,190	232	1,059	1.05	708.3	708.3	0.0
Y	16,710	334	1,504	0.74	708.5	708.5	0.0
Z	17,245	160	617	1.80	708.7	708.6	0.1
AA	17,395	52	243	4.57	708.7	708.6	0.1
AB	18,165	47	192	5.78	709.7	709.6	0.1
AC	18,245	25	161	6.89	710.2	710.1	0.1
AD	20,980	175	244	4.16	714.1	714.0	0.1
AE	23,875	712	1,503	0.62	718.1	718.0	0.1
AF	24,435	815	4,204	0.22	719.8	719.7	0.1
AG	26,015	560[2]	782	1.18	722.3	722.2	0.1
AH	27,405	500[2]	1,398	0.59	725.3	725.2	0.1
AI	28,130	200	876	0.94	725.6	725.5	0.1
Selmarten Creek							
A	235	951	1,430	0.34	715.1	715.1	0.0
B	615	900	632	0.76	715.1	715.1	0.0

[1]FEET ABOVE MOUTH
[2]THIS WIDTH EXTENDS BEYOND CORPORATE LIMITS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

FLOODWAY DATA

INDIAN CREEK AND SELMARTEN CREEK

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	WITH FLOODWAY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	DIFFERENCE (FEET)
SELMARTEN CREEK							
C	1030	740	615	1.78	715.2	715.1	0.1
D	1231	770	545	0.88	715.7	715.6	0.1
E	3410	82	179	2.68	716.1	716.0	0.1
WAUBANSEE CREEK							
A	35,635	65	N/A	N/A	669.6	669.6	0.0
B	36,525	95	N/A	N/A	670.2	670.2	0.0
C	37,215	60	N/A	N/A	670.5	670.5	0.0
D	38,160	70	N/A	N/A	671.2	671.2	0.0
E	39,510	290	N/A	N/A	672.1	672.1	0.0
F	40,360	310	N/A	N/A	672.4	672.4	0.0
G	41,800	75	N/A	N/A	672.6	672.6	0.0
H	43,125	40	N/A	N/A	673.1	673.1	0.0
I	44,165	100	N/A	N/A	674.0	674.0	0.0
J	44,725	105	N/A	N/A	674.9	674.9	0.0
K	45,875	80	N/A	N/A	675.9	675.9	0.0
L	47,125	70	N/A	N/A	677.4	677.4	0.0

[1]FEET ABOVE MOUTH

BEST COPY AVAILABLE

REVISED: 5/15/86

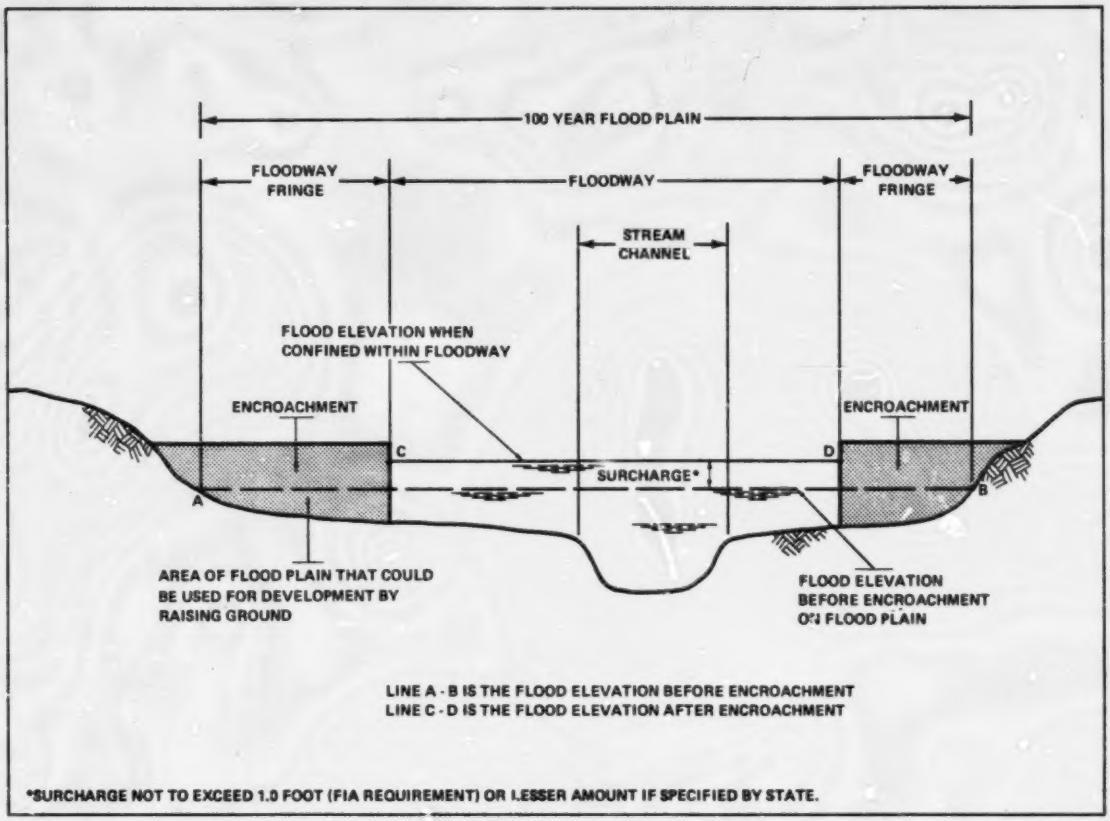
TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

FLOODWAY DATA

SELMARTEN CREEK AND WAUBANSEE CREEK


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FLOODWAY SCHEMATIC Figure 2

water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot

Ten reaches meeting the above criteria were required for the flooding sources of Aurora. These include three on the Fox River, five on Indian Creek, one on Selmarten Creek, and one on Waubansee Creek. The locations of these reaches are shown on the Flood Profiles (Exhibit 1).

BEST COPY AVAILABLE

5.2 Flood Hazard Factors

The FHF is the FIA device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10-and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of Aurora was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zones A2, A3, A4, A5, and A9:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones assigned according to FHFs.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

BEST COPY AVAILABLE

Zone C: Areas of Minimal Flooding; including areas that are protected from 100- and 500-year floods by dike, levee, or other water control structure; not subdivided.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the City of Aurora.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the City of Aurora is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FIA.

6.0 OTHER STUDIES

The DWR prepared a report on the Fox River in 1962 (Reference 7), a report on Indian Creek in 1960 (Reference 1), and a regulatory flood plain report for Waubansee Creek in 1975 (Reference 2). Information presented in the reports on the Fox River and Indian Creek was updated for 1976 conditions. Data from the report on Waubansee Creek were reviewed and incorporated into this study without modification.

The FIA published a Flood Hazard Boundary Map for Aurora in 1976 (Reference 12).

This study is authoritative for purposes of the Flood Insurance Program, and the data presented here either supersede or are compatible with previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Federal Insurance Administration, Regional Director, 1 North Dearborn Drive, Chicago, Illinois 60602.

BEST COPY AVAILABLE

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Fox River							
Reach 1	15	-2.4	-0.6	+1.8	025	A5	Varies
Reach 2	15	-1.7	-0.4	+1.2	015	A3	Varies
Reach 3	15	-1.8	-0.4	+1.3	020	A4	Varies
Fox River East Channel							
Reach 1	15	-2.4	-0.6	+1.8	025	A5	Varies
Reach 2	15	-1.7	-0.4	+1.2	015	A3	Varies
Indian Creek							
Reach 1	15	-2.4	-0.8	+0.6	025	A5	Varies
Reach 2	15	-4.3	-1.0	+1.2	045	A9	Varies
Reach 3	10,15,20	-1.8	-0.6	+1.1	020	A4	Varies
Reach 4	10	-2.4	-0.8	+0.9	025	A5	Varies
Reach 5	10	-1.2	-0.3	+0.8	010	A2	Varies
Selmarten Creek							
Reach 1	10	-1.1	-0.3	+0.50	010	A2	Varies
Waubansee Creek							
Reach 1	20	-0.9	-0.3	+0.9	010	A2	Varies

[1]FLOOD INSURANCE RATE MAP PANEL
[2]WEIGHTED AVERAGE
[3]ROUNDED TO THE NEAREST FOOT–SEE MAP

BEST COPY AVAILABLE

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

FLOOD INSURANCE ZONE DATA

FOX RIVER, FOX RIVER EAST CHANNEL, INDIAN CREEK, SELMARTEN CREEK AND WAUBANSEE CREEK

8.0 BIBLIOGRAPHY AND REFERENCES

1. State of Illinois, Department of Public Works and Buildings, Division of Waterways,[1] Survey Report for Flood Control, Indian Creek & Tributaries, Aurora and Vicinity, Kane County, Illinois, 1960.

2. ----------, Department of Transportation, Division of Water Resources, Preliminary Report on the Regulation of Construction within the Flood Plain of Waubansee Creek and Tributary, December 1975.

3. ----------, Department of Public Works and Buildings, Division of Waterways,[1] Floods in Illinois, Magnitude and Frequency, W.D. Mitchell, 1954.

4. U.S. Geological Survey, Floods in Aurora North Quadrangle, Illinois, Hydrologic Investigations Atlas, HA-70, 1963.

5. State of Illinois, Department of Transportation, Division of Water Resources, Magnitude and Frequency of Floods in Illinois, J.M. Carns, Springfield, Illinois, 1973.

6. U.S. Army Corps of Engineers, Hydrologic Engineering Center, Computer Program 723-X6-L202A, HEC-2 Water Surface Profiles, Davis, California, October 1973.

7. State of Illinois, Department of Public Works and Buildings, Division of Waterways,[1] Survey Report for Development of Fox River, Ottawa to McHenry Dam, La Salle, Kane, Kendall, McHenry, and Lake Counties, 1962.

8. Illinois State Water Survey, Waubansee Creek Flood Plain Analysis, J.P. Lardner, M.L. Terstriep, November 1975.

9. Chow, Ven Te, Open-Channel Hydraulics, New York: McGraw-Hill Book Company, Inc., 1959.

10. State of Illinois, Department of Public Works and Buildings, Division of Waterways,[1] Floods in Illinois, Magnitude and Frequency, 1962.

11. ----------, Department of Transportation, Division of Water Resources, Strategic Planning Study of Waubansee Creek from Montgomery to Oswego, Kane and Kendall Counties, Illinois, 1975.

12. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, City of Aurora, Kane and DuPage Counties, Illinois, September 1976.

13. State of Illinois, Department of Transportation, Division of Water Resources, Base Maps for State Floodplain Regulations on Waubansee Creek, Scale 1:4800, Contour Interval 2 Feet.

BEST COPY AVAILABLE

14. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:24000, Contour Interval 10 Feet: Aurora North Quadrangle, Illinois, 1973; Aurora South Quadrangle, Illinois, 1973; Normantown Quadrangle, Illinois, 1973; Napierville Quadrangle, Illinois, 1972.

Chow, V.T., ed., Handbook of Applied Hydrology. New York: McGraw-Hill, 1964.

City of Aurora, Corporate Limit Map, 1967.

Epstein Civil Engineering, Inc., Storm Drainage Report of Waubansee Creek, Fox Valley East -- Region I, for the Urban Investment and Development Company, Chicago, Illinois, September 1973.

State of Illinois, Department of Transportation, Division of Water Resources Management,[1] Flood Control Plan for Waubansee Creek and Tributaries in Fox Valley East, Region II, for Aurora Venture, 1975.

U.S. Geological Survey, Water Resources Data for Illinois, Part I, Surface Water Records, Published Annually.

[1]Currently Department of Transportation, Division of Water Resources

BEST COPY AVAILABLE

9.0 REVISIONS DESCRIPTION (Revised May 15, 1986)

9.1 Purpose

The purpose of this Flood Insurance Study Revisions Description is to incorporate new and revised data into this currently effective Flood Insurance Study for the City of Aurora, Kane and DuPage Counties, Illinois. This Revisions Description is intended to provide updated information that aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

9.2 Acknowledgments

The hydraulic analyses for this Revisions Description were obtained from the Illinois Department of Transportation (DOT). The Federal Emergency Management Agency (FEMA) reviewed and accepted these data for purposes of this revision.

9.3 Scope

As a result of channel improvements, the creation of Waubansee Lake, and structural changes implemented in conjunction with the Fox Valley Villages Region II Project, the base flood elevations and floodplain delineation along Waubansee Creek were revised. The revisions affect the entire length of the creek through the city, from approximately 1,950 feet downstream of 83rd Street upstream to the Elgin, Joliet and Eastern Railroad.

9.4 Hydrologic and Hydraulic Analyses

The hydraulic reanalysis of Waubansee Creek was undertaken to revise the water-surface elevations to reflect the impact of channel and structural modifications, which include the creation of Waubansee Lake and the addition of 83rd Street bridge.

The 100-year discharge value that was used in the original analysis was adopted for this analysis. The analysis did not include the 10-, 50-, or 500-year frequency flood events. To allow for zone calculations, the 10-year flood elevation has been generated by approximate methods.

The cross sections used for the reanalysis of Waubansee Creek were field surveyed to reflect current floodplain conditions in conjunction with recent development, including the Fox Valley Villages Region II Project. The roughness coefficients (Manning's "n") were assigned on the basis of field inspection and engineering judgment. The "n" values ranged from 0.035 to 0.055 for the channel and from 0.050 to 0.070 for the overbank portions of the floodplain.

The 100-year starting water-surface elevation was derived using the slope-area method. Water-surface elevations along the length of Waubansee Creek were calculated using the U.S. Army Corps of Engineers HEC-2 step-backwater computer model (Reference 1).

BEST COPY AVAILABLE

The DOT restudy generated a revised flood profile for the Waubansee River (Reference 2). Topographic information concerning the redelineation of the floodplain boundaries was also submitted by the DOT (Reference 3).

9.5 Floodways

Floodway computations for Waubansee Creek were revised as a result of the hydraulic modifications made along the creek. The floodways were computed on the basis of equal conveyance reduction from each side of the floodplain. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was revised and are presented in Table 2, Floodway Data.

9.6 Other Studies

A revision to the Flood Insurance Study for the Unincorporated Areas of DuPage County (Reference 4) is currently in progress. The DuPage County study and this study are in agreement. This revision does not agree with the floodway and floodplain delineations for Waubansee Creek in the Flood Insurance Study for the Unincorporated Areas of Kane County (Reference 5) because of the more detailed topographic information used in this revision.

9.7 Location of Data

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 300 South Wacker Drive, Chicago, Illinois 60606.

9.8 Bibliography and References

1. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water-Surface Profiles, Generalized Computer Program, Davis, California, April 1984.

2. State of Illinois, Department of Transportation, Division of Water Resources, Flood Profile, Waubansee Creek, Scale 1:4800, revised 1980.

3. ----------, Department of Transportation, Division of Water Resources, Flood Plain Topographic Map, Waubansee Creek, Sheets 7A and 7B, Scale 1:4800, Contour Interval 2 feet, revised 1980.

4. Federal Emergency Management Agency, Flood Insurance Study, DuPage County, Unincorporated Areas, Illinois, April 1982.

5. ----------, Flood Insurance Study, Kane County, Unincorporated Areas, Illinois, March 1982.

BEST COPY AVAILABLE

BEST COPY AVAILABLE

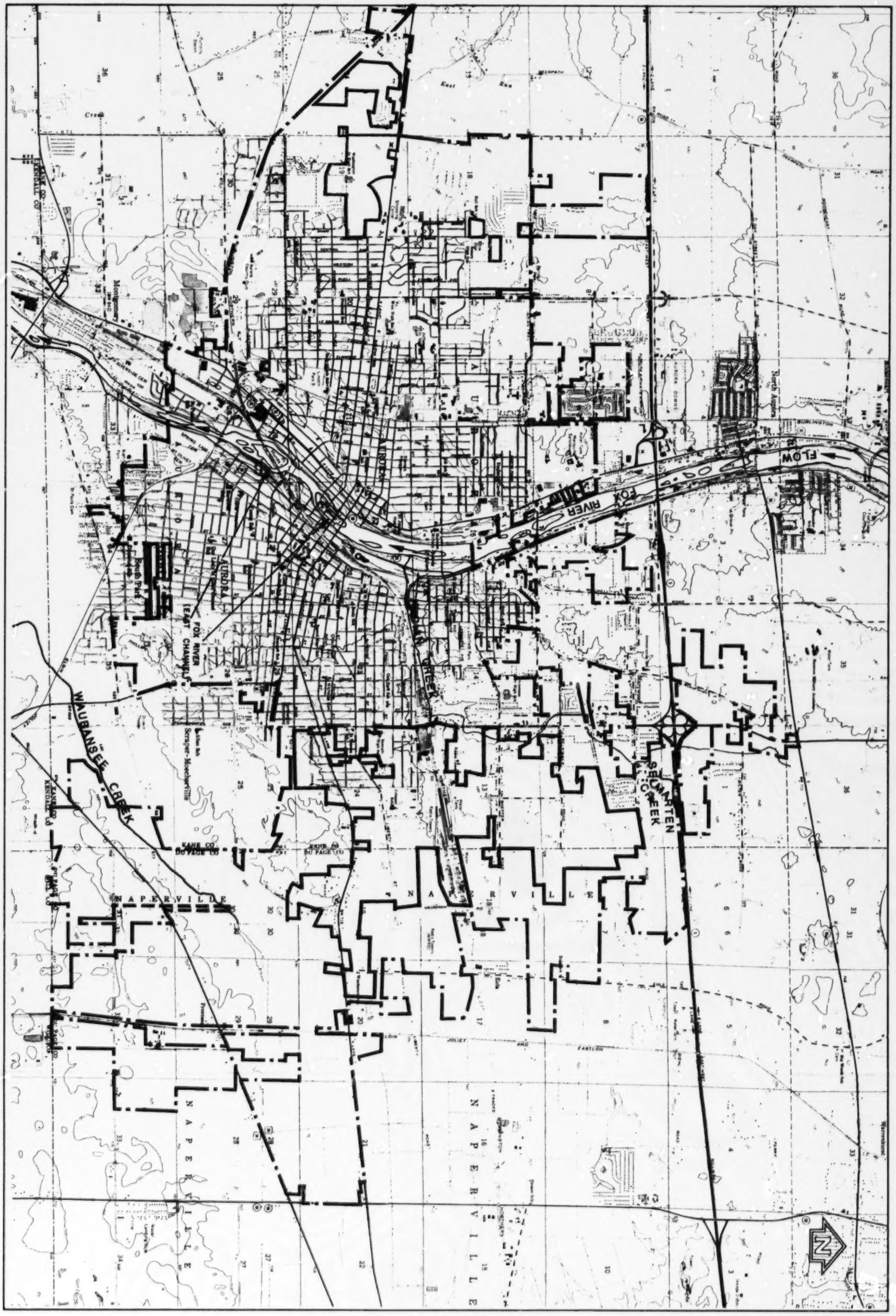


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

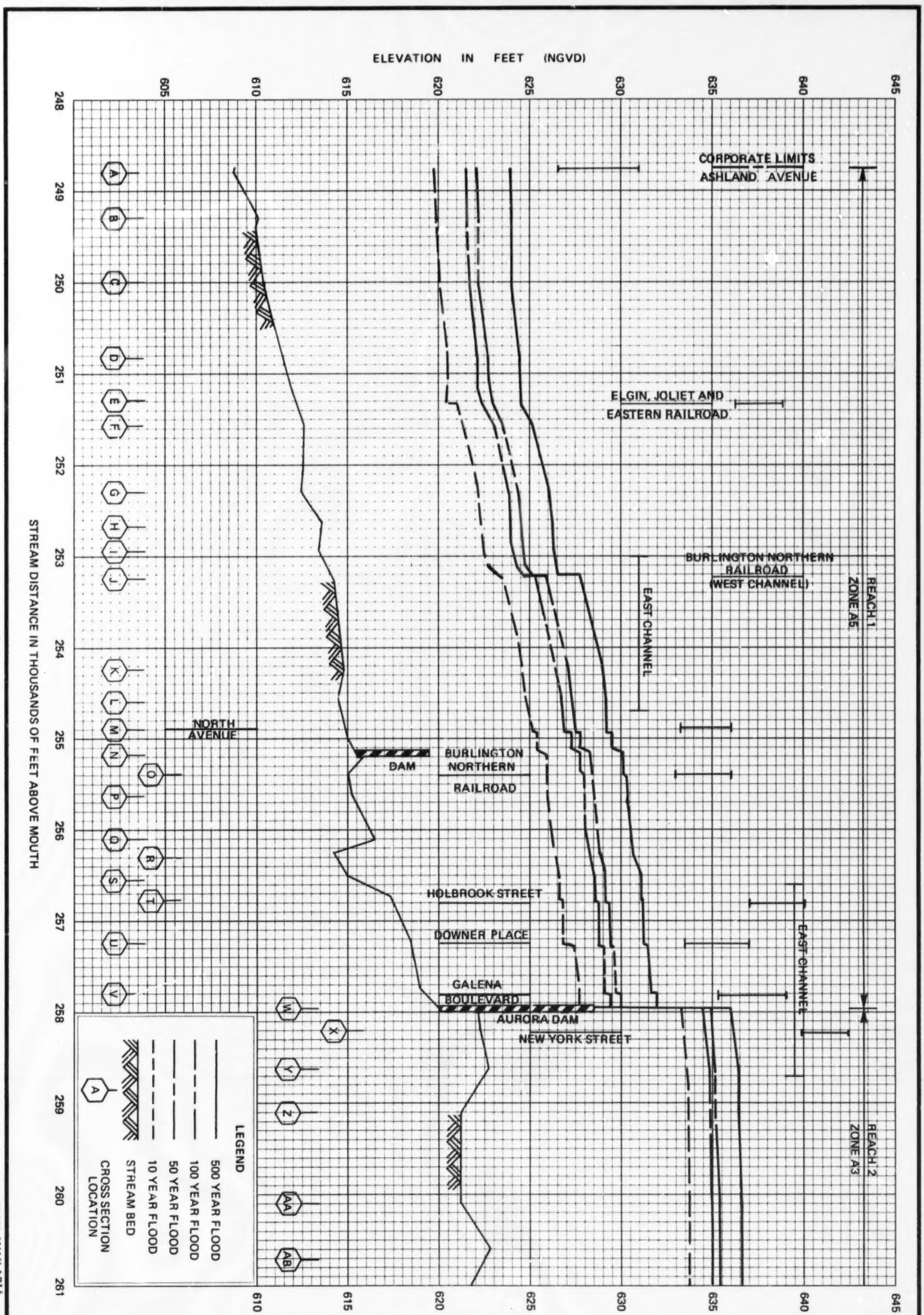
CITY OF AURORA, IL

(KANE AND DU PAGE COS.)

APPROXIMATE SCALE

4000 0 4000 8000 12000 FEET

VICINITY MAP



FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL

(KANE AND DU PAGE COS.)

FLOOD PROFILES

FOX RIVER

01P

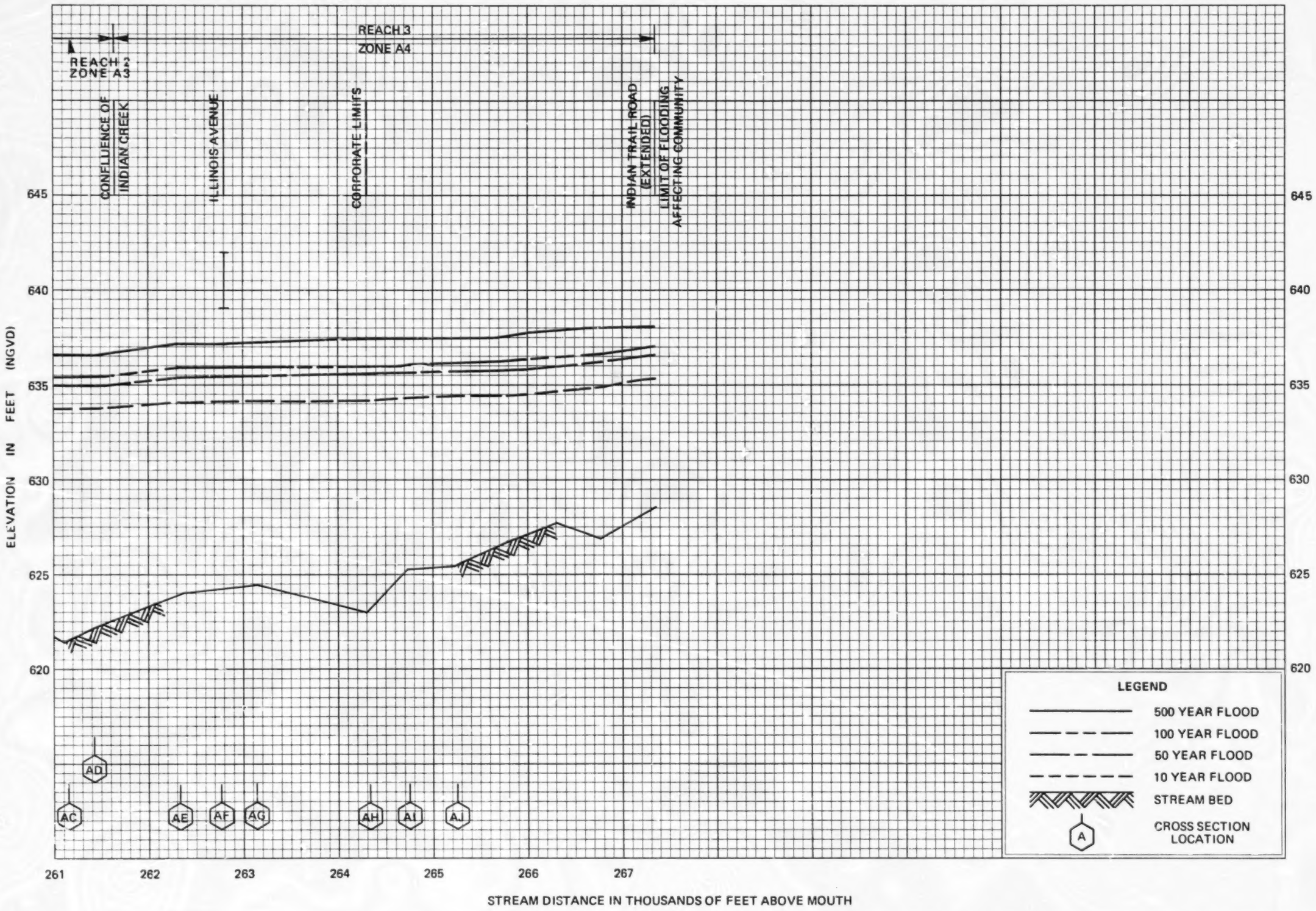
97

BEST COPY AVAILABLE

BLANK PAGE

BLANK PAGE

BLANK PAGE



FLOOD PROFILES

FOX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

02P

BEST COPY AVAILABLE

ELEVATION IN FEET (NGVD)

615 620 625 630 635 640 645

252 253 254 255 256 257 258 259

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE MOUTH

CONVERGENCE WITH WEST CHANNEL

REACH 1 ZONE A5

BURLINGTON NORTHERN RAILROAD

DIVERGENCE FROM WEST CHANNEL

WEST CHANNEL

CONVERGENCE WITH WEST CHANNEL

BENTON STREET

FOX STREET

MAIN STREET

NEW YORK STREET

DIVERGENCE FROM WEST CHANNEL

REACH 1 ZONE A5

REACH 2 ZONE A3

AURORA DAM

A B C D E F G H

LEGEND

500 YEAR FLOOD

100 YEAR FLOOD

50 YEAR FLOOD

10 YEAR FLOOD

STREAM BED

CROSS SECTION LOCATION

620 625 630 635 640 645

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL

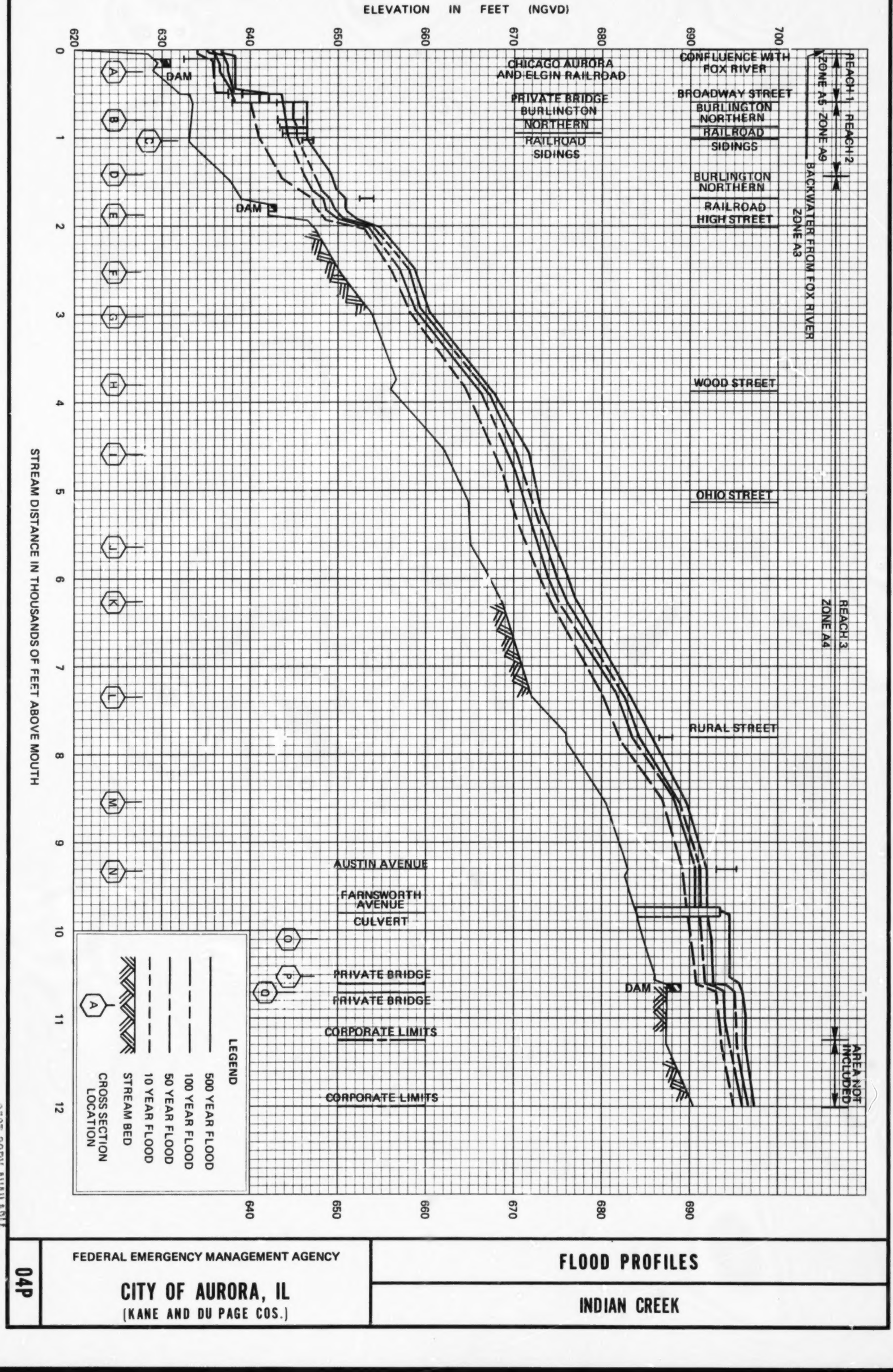
(KANE AND DU PAGE COS.)

FLOOD PROFILES

FOX RIVER EAST CHANNEL

03P

BEST COPY AVAILABLE



FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL

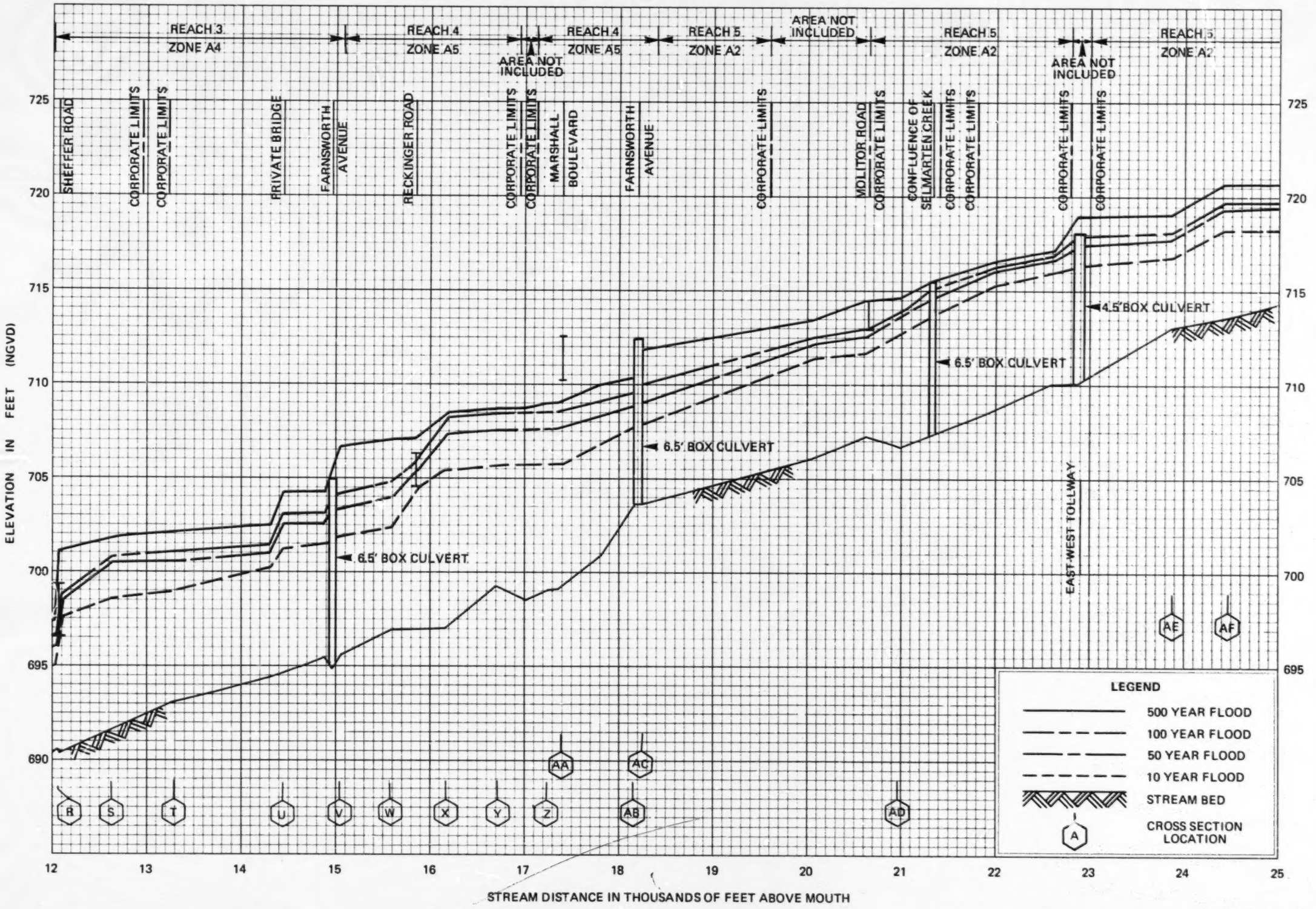
(KANE AND DU PAGE COS.)

FLOOD PROFILES

INDIAN CREEK

04P

BEST COPY AVAILABLE



FLOOD PROFILES

INDIAN CREEK

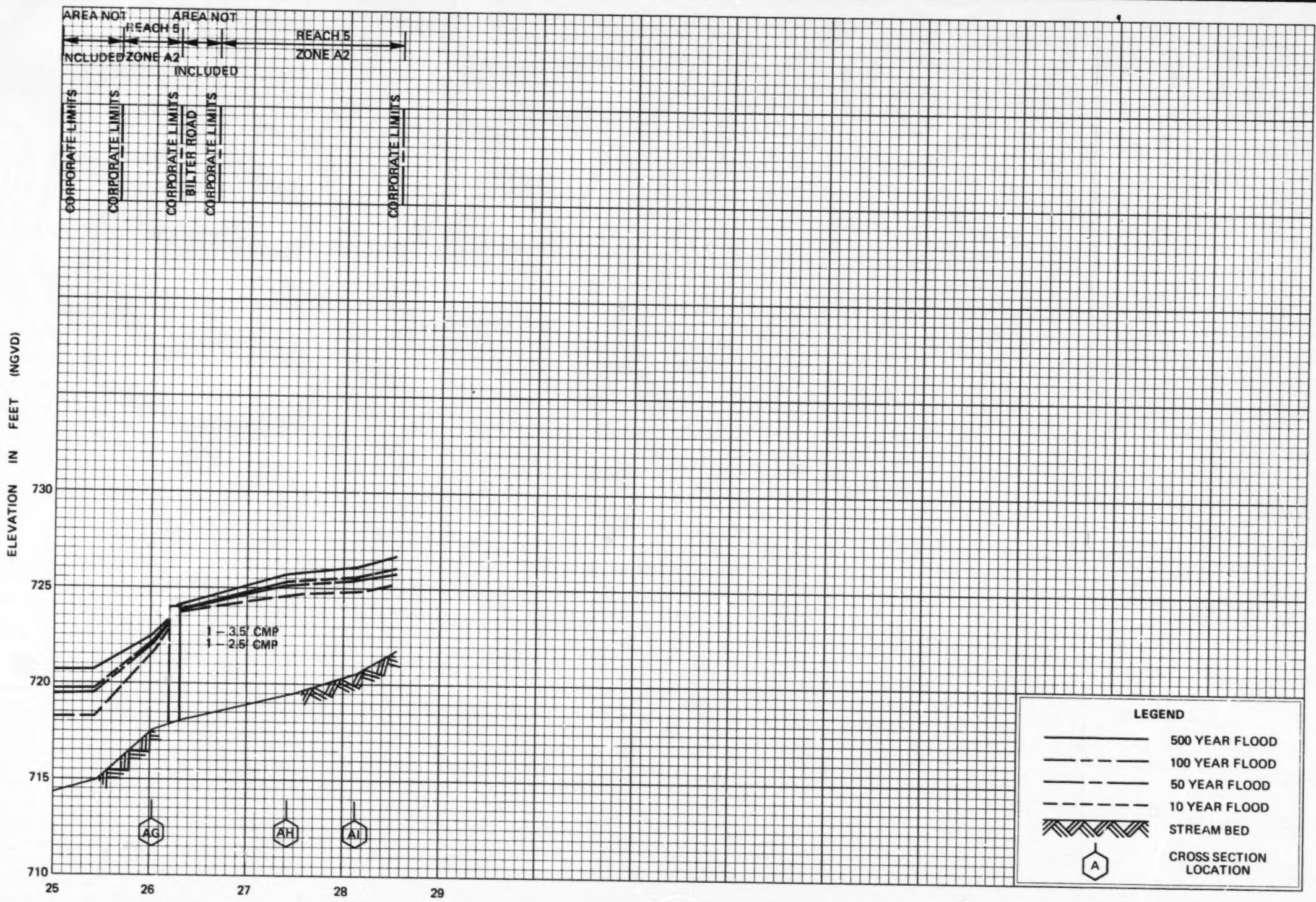
FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL

(KANE AND DU PAGE COS.)

05P

BEST COPY AVAILABLE



FLOOD PROFILES

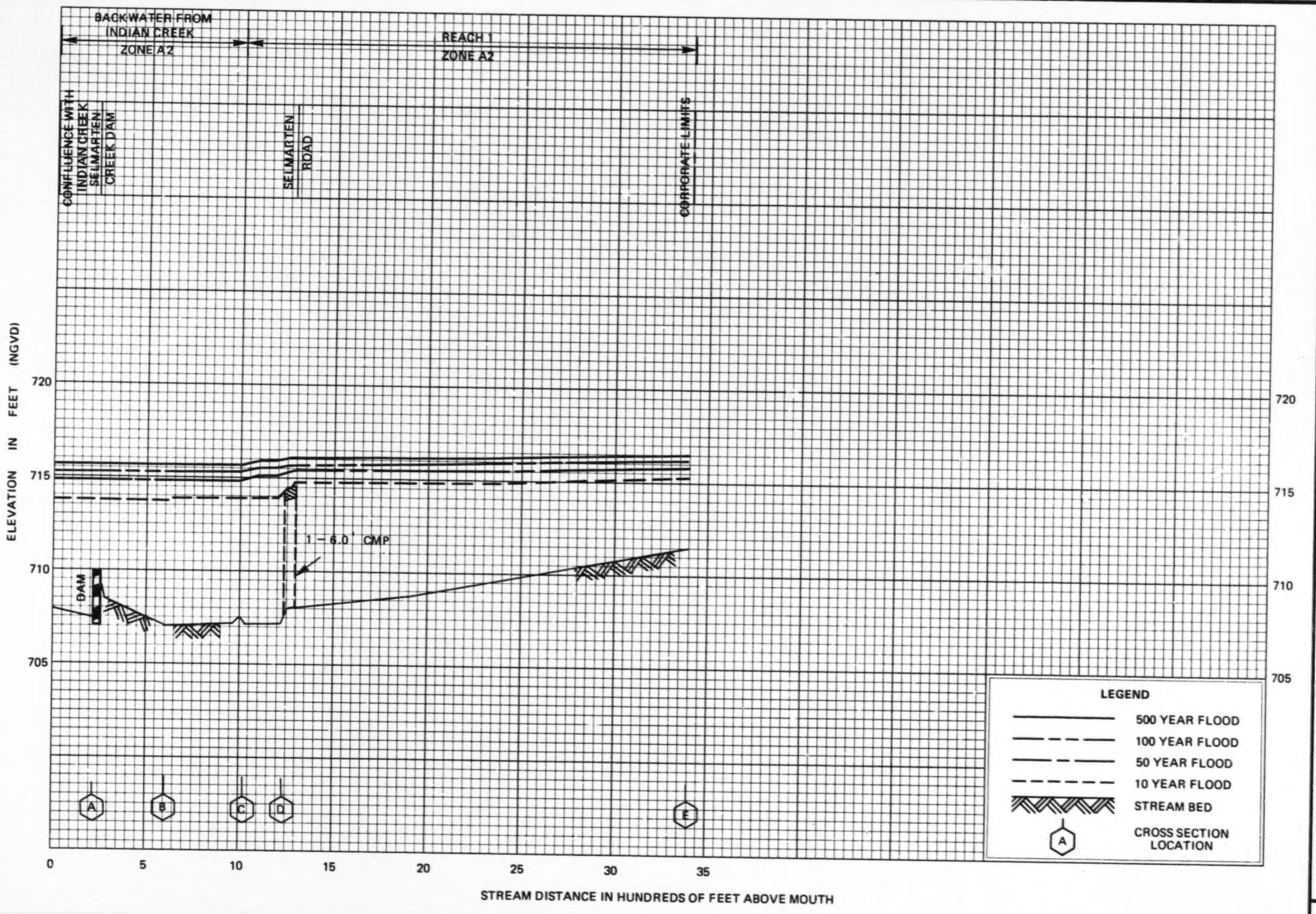
INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

06P

BEST COPY AVAILABLE



FLOOD PROFILES

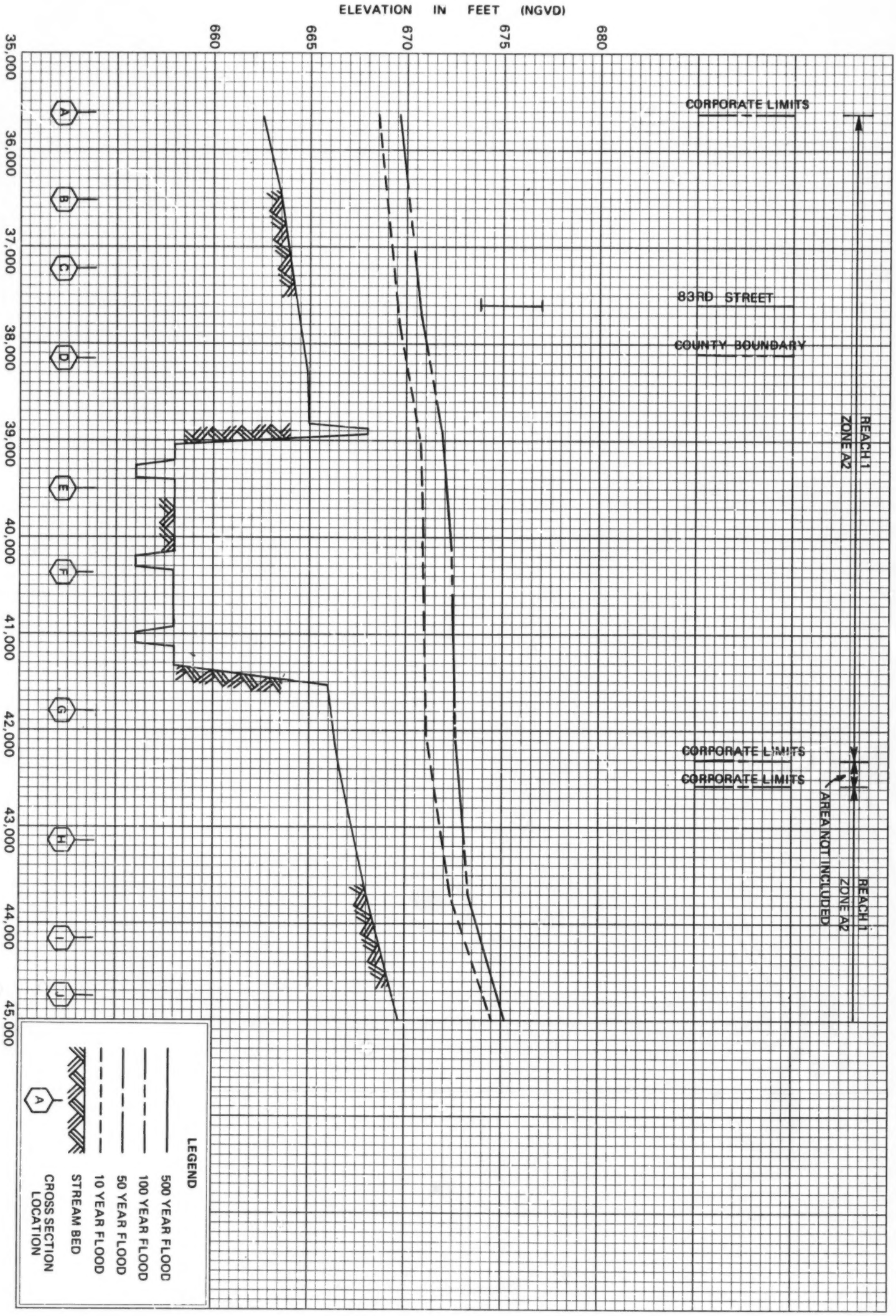
SELMARTEN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

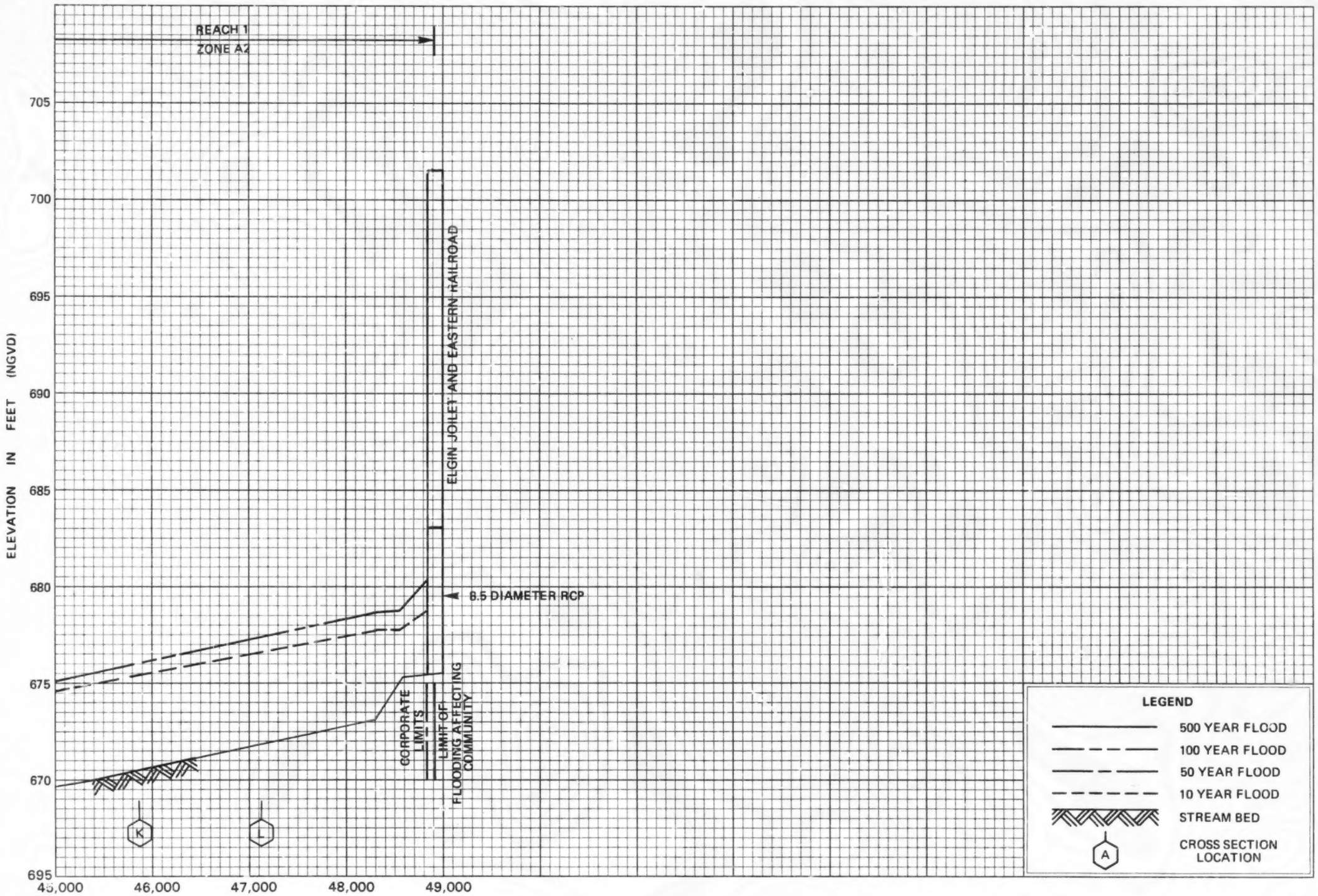
07P

BEST COPY AVAILABLE



08P	FEDERAL EMERGENCY MANAGEMENT AGENCY **CITY OF AURORA, IL** (KANE AND DU PAGE COS.)	**FLOOD PROFILES** **WAUBANSEE CREEK**

REVISED: 5/15/86
BEST COPY AVAILABLE



FLOOD PROFILES

WAUBANSEE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF AURORA, IL
(KANE AND DU PAGE COS.)

09P

REVISED: 5/15/86

BEST COPY AVAILABLE